Flight Operations At J. F. Oberlin University: Why Are We Training Commercial Pilots?

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Abstract

A combination of widespread growth in airline fleets and the large-scale retirement of experienced pilots has created a worldwide shortage of commercial pilots. This shortage is expected to become more severe over the next decade. In Japan the situation has steadily deteriorated to the point that airlines have been forced to recruit hundreds of foreign pilots. In an attempt to increase training capacity in Japan, three universities have set up undergraduate programs to train commercial pilots: Tokai University, Hosei University and J. F. Oberlin University. The Flight Operations Program at J. F. Oberlin University was launched in April 2008, with students spending two years at Oberlin and two years in Arizona for flight training. This paper provides an overview of the worldwide pilot shortage, the pilot training situation in Japan, and the Flight Operations Program at Oberlin.

The Worldwide Pilot Shortage

Notwithstanding uncertainty created over the past year by the wildly fluctuating price of crude oil, the world is now facing a chronic shortage of commercial pilots. The International Air Transport Association (IATA) estimates that more than 200,000 new pilots will be needed by 2018, and it is concerned that existing training programs are not sufficient to meet the demand. (Epstein 2008.) An IATA news briefing of February 27th 2008 stated that “if the situation is not remedied, the airline industry will face a shortage of more than 42,000 pilots”. In the United States the problem has been exacerbated by the retirement in recent years of large numbers of experienced commercial pilots who originally learned to fly as

military pilots during the Vietnam War. In addition, there has been a general deterioration in pay and conditions at major American airlines since the post-2001 aviation slump, and over the same period there has been a rise in the number of lower-paying jobs at regional carriers with the result that “flying has lost much of its glamour, and not enough young people want to become pilots.” (Marks 2007 and see also Smith 2007.)

A number of other countries are suffering from serious pilot shortages as they try to reconcile the loss of experienced crew with the need to keep expanding airline fleets in the air. According to an Aeroflot survey, “up to 1,000 of Russia’s 10,000 pilots leave the industry a year, due to old age, health or moving to work abroad.” (Gethin 2007.) In Australia, the chief of staff of Regional Express airline has warned that the pilot shortage “will turn into a crisis in 12 months’ time as demand by the larger airlines intensifies to cope with their unprecedented expansion plans.” (Ionides 2007.) Likewise airlines in China and India are facing problems caused by their rapid growth. The deputy head of the General Administration of Civil Aviation of China has stated that inadequate Chinese training capacity will lead to a shortfall of 2,000 pilots by 2010. (Johnson 2007.) India meanwhile is estimated to need 10,000 pilots by 2020, compared with a total of 3,000 pilots now. (Pepper 2007.)

The Situation in Japan

Japan is experiencing a similar shortage of commercial pilots and although the situation is not as acute as that in China or India, it has in recent years become increasingly serious. Japanese airlines have lost a significant number of experienced pilots with the retirement of the “baby-boom” generation over the past decade, but at the same time the overall number of commercial captains and first officers in Japan has steadily grown, from 5,398 in 1999 to 5,920 in 2006. The increased demand for pilots has not, however, been matched by increases in training capacity and consequently there has been a marked increase in the hiring of non-Japanese pilots. In fact, the number of foreign captains and first officers rose from 98 in 1999 to 347 in 2006, as shown in Table 1.

Table 1: Numbers of foreign and Japanese airline pilots in Japan, 1999-2006.

Pilot category	1999	2000	2001	2002	2003	2004	2005	2006
Captains (Japanese)	3,027	3,022	2,962	3,023	3,056	3,121	3,180	3,280
Captains (Foreign)	79	149	163	149	190	210	203	213
Captains (Total)	3,106	3,171	3,125	3,172	3,246	3,331	3,383	3,493
First officers (Japanese)	2,273	2,342	2,425	2,467	2,456	2,373	2,340	2,293
First officers (Foreign)	19	63	32	60	98	124	121	134
First officers (Total)	2,292	2,405	2,457	2,527	2,554	2,497	2,461	2,427
Captains & first officers (Japanese)	5,300	5,364	5,387	5,490	5,512	5,494	5,520	5,573
Captains & first officers (Foreign)	98	212	195	209	288	334	324	347
Captains & first officers (Total)	5,398	5,576	5,582	5,699	5,800	5,828	5,844	5,920

NB: This table is based on data from Aviation Seen Through Numbers, a book of aviation statistics published annually by the Japan Civil Aviation Promotion Foundation under the supervision of the Civil Aviation Bureau of the Ministry of Land, Infrastructure and Transport. (See pages 97 and 105 of the 2006 and 2007 editions respectively.)

The shortage of airline pilots in Japan was the main focus of the 3rd Liaison Meeting of the Aircraft Pilot Training Organization, held at the Ministry of Land, Infrastructure and Transport on 17th December, 2007. Representatives from three large airline groups detailed their anticipated pilot needs for the coming years at this meeting, which was attended by a delegation from J. F. Oberlin University's Department of Aviation Management. The first presentation was by Japan Airlines (JAL), which with revenues of $19.68 billion ranked as the world's fourth largest airline on the CNN Fortune Global 500 listing for 2007. In addition to its long-haul business, the JAL group contains several regional airlines and as of January 2007 maintained a fleet of more than 500 aircraft. Their representatives explained that in each of the three previous years they had recruited 67 or 68 entry-level pilots, between 12 and 15 of which were trained at the Civil Aviation College and the remainder of whom went through the JAL pilot training program.

The second airline group, All Nippon Airways (ANA), is much smaller than JAL in terms of fleet size, overall revenue and the number of international routes. It does, though, carry more domestic passengers than its rival, and after restructuring its cost base has transformed itself into a profitable airline with such a good reputation for safety, reliability and service that it received Air Transport World's Airline of the Year Award in 2007. (ATW Staff 2007.) ANA recruited 65 entry-level pilots in 2007: 5 of these were graduates of the Civil Aviation College; 3 were ex-Self Defense Force pilots; and the remainder underwent the ANA pilot training program. Over the next few years the ANA group anticipates an annual

hiring requirement of approximately 120 Japanese pilots.

The final group represented at the meeting was Nippon Cargo Airlines (NCA), the only Japanese airline specialising in cargo transport. NCA currently requires 200 pilots to fly their 747-400F freighter aircraft, but in order to fulfil an ambitious expansion program it will need a further 200 pilots by 2015. NCA's expansion, and the presentations made by JAL and ANA indicated that there would be a strong demand for newly-trained pilots over the coming decade, and there was a clear feeling at the meeting that as many of the pilots as possible should be Japanese. The question posed by the airlines is this: where will the new pilots come from?

At present there is only one national pilot training institution in Japan, the Civil Aviation College, which was founded in 1954 to train commercial pilots for the newly-created Japanese airlines. Since its inception the Civil Aviation College has had to cope with fluctuating demand for pilots, rising to a peak in the early 1970s when its annual intake was 135 students. Cutbacks followed the oil shocks of the 1970s, and there have been further changes since then with, for instance, the establishment and subsequent closure of a department to train helicopter pilots. The Civil Aviation College currently runs a two-year training program for applicants who have already completed at least two years of post-secondary education, and accepts a maximum number of 72 students per year. Given the high failure rate of students on pilot training programs, the Civil Aviation College alone is not able to meet the shortfall in the number of airline pilots in Japan.

Three New Programs to Train Pilots

Such was the background to the decision by Tokai University and All Nippon Airways to pool resources and establish Japan's first undergraduate degree program to train airline pilots. ANA's President and CEO, Mineo Yamamoto, said in a press release on June 21st 2005: "We are very pleased to work with Tokai University to provide an innovative new way to deal with the impending pilot shortage." This undergraduate degree program, which accepted its first students in April 2006, includes a period of flight training in the United States that lasts approximately one year.

Tokai University faced several risks in launching their new venture. Firstly, there was a

maturity issue: it is an undergraduate program and so the university had to be prepared to accept high school graduates. A precedent exists for this kind of program. In the late 1960s the Civil Aviation College decided to lower its entry requirements so that high school graduates could be accepted. However in the 1980s it discontinued the practice on account of the increased technological demands of modern aircraft and the increased burden that this was imposing on training. Nowadays, as mentioned previously, applicants to the Civil Aviation College must already have completed at least two years of post-secondary education. The first cohort of the Tokai University program actually had an average age in the mid-20s. This changed dramatically the following year, though, with almost the entire intake being recently-graduated high school students. Apparently these latter students have had a number of problems, including low English ability, weak study skills, and a limited knowledge of current affairs.

A second risk was the decision to base the flight training at the University of North Dakota (UND) in the United States. There are many differences between Japanese and American culture, especially with regard to the way in which business decisions are made and implemented, and this adds an extra layer of complexity to the program. (Mead 1998, Usunier 1998, Trompenaars 1993, Hosking & Morley 1991, Mead 1990 and Handy 1985.) Furthermore, Tokai University has set its students a tough English language hurdle by locating the flight training in the US: before they go to UND all students have to achieve a score of 73 on the TOEFL internet-based test (iBT) or 525 on the TOEFL paper-based test (PBT). This places a lot of pressure on students (and instructors) to make progress in their English studies during the freshman year. Indeed, although the original intention was for students to go to UND after only 6 or 12 months of study at Tokai University, it now seems that a lot of students require 12 or even 18 months before they can achieve the necessary English level.

The final risk was financial: students have to pay a lot of money for the program. In fact, the period of flight training at UND alone costs more than $80,000. This means that the total cost of the program is far greater than for other undergraduate programs offered at the university. When compared with flight training in Japan at the Civil Aviation College, however, the Tokai program is very competitive because the cost of aviation fuel is significantly lower in the United States. Furthermore, students who successfully pass all of the examinations, then graduate from the program and go on to become first officers with

major airlines will earn a large salary with which to repay their student loans. Nonetheless, cost remains a sensitive issue.

In January 2006 J. F. Oberlin University decided to establish a similar four-year pilot training program in collaboration with Japan Airlines. In addition to the risks faced by Tokai University we had the extra challenge of setting up a program without the base of an existing engineering department. This was not a problem for the third institution to throw its hat into the ring, Hosei University, which in late 2007 announced a radically different solution to the problem: a six-year combined undergraduate and postgraduate program with flight training conducted in Japan. Representatives from Hosei, Tokai and Oberlin described their programs at the aforementioned Liaison Meeting of the Aircraft Pilot Training Organization held in December 2007. Table 2 shows some of the information that was presented, and the key information that the airlines want to know: when the pilot students will graduate from these new training programs and be ready to start their commercial careers.

Table 2: Maximum expected number of graduates for the pilot training programs.

Institution (program start)	2008	2009	2010	2011	2012	2013	2014
Tokai University (April 2006)	2	2	34	41	c.40	c.40	c.40
J. F. Oberlin University (April 2008)	0	0	0	0	c.19	c.30	c.30
Hosei University (April 2008)	0	0	0	0	0	0	c.30

The Flight Operations Program

The pilot training program at J. F. Oberlin University is, after several name changes, now known as the Flight Operations Program. Physically it is located at the PFC campus, and administratively it is housed within the Department of Aviation Management in the College of Business Management. The first cohort of 19 students entered the university in April 2008. The aim is to increase the number of students to one cohort of 30 students enrolling every year. If they successfully pass all of their examinations, these students will graduate with a Bachelor's degree plus a radiotelephony licence and a range of flying licences. The flying licences include instrument and commercial ratings for both the American Federal Aviation Administration (FAA) and the Japan Civil Aviation Bureau (JCAB), and they cover single-engine (SE) and multi-engine (ME) aircraft types.

The Flight Operations Program is similar in structure to the program established at Tokai University, and it faces the same issues as those described in the previous section: namely the maturity of the students; conducting the flight training in the United States; and the cost of the program. Students spend the first three semesters at Oberlin, studying English and taking pilot ground school courses in preparation for flight training in America. They have two main goals to achieve during this period. Firstly, they have to pass a JCAB radiotelephony examination so that they can later take the JCAB flying licences. Secondly, they have to achieve a score of at least 525 on the TOEFL Institutional Testing Program (ITP) test so that can enter Arizona State University (ASU), where the flight training takes place. The English language courses taken by students in the first three semesters support both of the goals, and cover aviation English and TOEFL skills training. Class size is small, with 10-15 students per group, and there are 8 *koma* of English lessons in the first and second semesters, then 4 *koma* per week in the third semester.

If the students pass the JCAB radiotelephony examination and achieve the required TOEFL score, they go to ASU from the start of the fourth semester for two years of flight training. In addition to the lower cost of aviation fuel in the United States, Arizona offers more reliable weather conditions than Japan. Indeed, tourist websites often point out that the city of Phoenix, where ASU is located, enjoys more than 330 days of sunshine per year. This means that few flying lessons are lost to bad weather. Students study and train for FAA flying licences during the first 18 months at ASU, before switching to the equivalent JCAB licences for the last 6 months. Finally the students return to Japan and spend their eighth and last semester at Oberlin before graduation, with the first cohort due to graduate in March 2012.

Conclusion

There is a worldwide shortage of commercial pilots and experts predict this shortage to become more severe over the course of the next decade. However, these predictions are based on airline growth projections which in turn assume that aviation fuel is not prohibitively expensive. When the price of oil increased sharply and unexpectedly in 2008, US airlines reacted swiftly by reducing capacity. This was largely done by accelerating the retirement of older and less-efficient aircraft types such as Boeing 737-300/500s, Bombardier CRJ 100/200s and Boeing MD80/90s. (Jackman 2008 and Ott 2008.) If the oil

price spikes of 2008 prove to be a short-lived bubble then the retired aircraft will soon be replaced by more modern and efficient models that have already been ordered. Airline growth will then continue apace, in turn bringing increased demand for pilots. Industry insiders such as Drew McGill, Boeing's director of marketing, and Tim Clark, CEO of Emirates, have publicly stated that they believe this will happen. (Anselmo 2008 and Flottau et alia 2008.) If, on the other hand, the price of oil remains high or even increases further then airlines may be forced to back away from aircraft orders that they have placed, forgoing their deposits and possibly triggering a crisis in the industry. For all the predictions and estimates, it is impossible to know how the price of oil will change in coming years. What is certain, though, is that there currently exists a shortage of commercial pilots in Japan, and the Flight Operations program at J. F. Oberlin University has been created to help meet this need.

List of Acronyms

ANA All Nippon Airways
ASU Arizona State University
CEO Chief Executive Officer
FAA Federal Aviation Administration
IATA International Air Transport Association
iBT Internet-Based Test (see TOEFL)
ITP Institutional Testing Program (see TOEFL)
JAL Japan Airlines
JCAB Japan Civil Aviation Bureau
ME Multi-Engine (aircraft)
NCA Nippon Cargo Airlines
PBT Paper-Based Test (see TOEFL)
PFC Planet Fuchinobe Campus (of J. F. Oberlin University)
SE Single-Engine (aircraft)
TOEFL Test Of English as a Foreign Language (see also iBT, ITP and PBT)
UND University of North Dakota

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